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ABSTRACT

This handbook is designed to aid school administrators, policy-makers, and teachers in bringing a "futures orientation" to their schools. The first part of the book describes a "futuring process" developed as a tool for examining alternative future probabilities. It consists of a series of diverging and converging techniques that alternately expand and focus the participants thoughts. The steps are as follows: brainstorming, a Delphi survey of perceived possibilities, a resulting "futures wheel" showing a divergent pattern of multiple causality, "cross impact matrices" evaluating reciprocal causality, and finally, written scenarios. Six scenarios, each with its particular "futures wheel" chart, are described; they are: (1) the information revolution and its backlash; (2) the aging market (increase in the median age of the U.S. population); (3) the decline in sexist attitudes and structures; (4) more flexible career choices; (5) redefinition of basic education to include technological literacy, problem-solving, and decision-making; and (6) increased awareness of global economic interdependence. The next chapter describes various complementary forecasting techniques, providing references for additional information on each. The handbook concludes with an annotated alphabetical listing of organizational and human resources. (TE)

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Handbook for Conducting Future Studies in Education

Phi Delta Kappa Commission on Schooling for the 21st Century

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Phi Delta Kappa Commission on Schooling for the 21st Century

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Bloomington, Indiana

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The Phi Delta Kappa Commission on Schooling for the 21st Century

Fred Andelman
Director of Professional Development
Massachusetts Teachers Association

Wilma Brady
Coordinator, Visiting Lecturers Program
Equitable Life Assurance Society

Willard Daggett
Director, Division of Occupational Education Instruction
New York State Department of Education

Mary Lee Fitzgerald
Superintendent of Schools
Montclair (N.J.) Public Schools

Joseph Pappalardo
Professor of Education
Westfield (Mass.) State College

Masha Rudman
Professor of Education
University of Massachusetts

George Urch
Professor of Education
University of Massachusetts

Robert C. White
Associate Director, Southwest Residential College
University of Massachusetts

Special Consultant

Magda Cordell McHale
Director, Center for Integrative Studies
State University of New York at Buffalo

Future Studies Program – Futuring Project

Peter Wagschal, Project Director
Professor of Education
University of Massachusetts

Clifford McCarthy
Project Coordinator

Adrienne Kanach
Planning Techniques Coordinator

Dolores Wolfe
Resources Coordinator

Benjamin Hewat
Project Assistant

Michael Maffie
Graphics

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Introduction

Under the auspices of Phi Delta Kappa International, the Future Studies Program at the University of Massachusetts and the local chapter of Phi Delta Kappa created the Commission on Schooling for the 21st Century. This commission included educators and futurists from a wide variety of backgrounds and interests. The commission was charged with using the Futuring Process to develop several scenarios of the future of education and to produce a handbook on futuring for educators.

This handbook is designed to aid school administrators, policymakers, and teachers in bringing a "futures orientation" to their schools. This can, and should, occur at several levels. Administrative processes can be given a futures orientation by examining in detail the various consequences of decisions before they are made. Likewise, curricula can be changed to include the information and skills that children will need in their world.

The systematic study of the future, with its implications for institutional planning, generally has been neglected. Specifically, many planners assume, however implicitly, that the standards, values, and processes of the past and present will be adequate for the future. Based on this assumption, the resultant planning is usually limited to an extrapolation of the present. While a degree of this type of extrapolation is essential to any long-range planning effort, the exclusion of processes that generate alternative futures is a serious shortcoming.

Developing a futures orientation, or *futuring*, is more than long-range planning or forecasting. Often "long-range planning" is used to mean allocating a budget for the next five years or so, without even considering what the current trends are or how the situation might be different five years hence. Futuring takes into account a wider picture of the future, in which the interconnectedness and prioritizing of events become important. Whereas forecasting concerns itself with the probabilities of events occurring, futuring forces us to confront our values and make decisions about the desirability of those events. Most importantly, futuring presumes that we have choices to make and that the success or failure of these decisions is at least partly within our control.

Implied in this notion of forecasting alternative futures is the belief that the future can indeed be designed, shaped, and controlled. Joseph (1974) suggests that designing, rather than merely coping with the future, represents an alternative to "future shock." The forces of accelerating change, he says, "can be turned to the conscious creation of desired futures. Instead of controlling the future by limiting the rate of change, we can capitalize on rapid change by programming away the problems we can foresee and by programming in the desirable opportunities we are capable of imagining." Along the same line, Harman (1976) contends that "someone has a vision

of the future. . . and as a result, certain events are taking place in the present." Shane (1977) also states that in making judgments about a probable world of the future, we are voicing a call to action. In others words, generating alternative futures through forecasting tends not only to identify future trends but to initiate action.

As a mechanism for making possible futures more apparent, forecasting is a prerequisite for futures-oriented planning and decision making. Furthermore, it enables planners to identify the directions of past and present ideas, the evolution of new trends, and the possible impact of these new trends upon society. While establishing what *can* change and *can* happen, forecasting, unlike predicting, cannot tell us what *will* happen with any degree of certainty. Forecasting can only provide the information to assist planning for future probabilities.

The past several decades have been difficult ones for education. The traditional classroom model and curriculum were found to be outmoded and not relevant to our rapidly changing society; yet, in general, our efforts to develop something better have not been successful. Currently, we are faced with pervasive illiteracy, declining public confidence in education, pared budgets, shifting demographics that affect enrollments, and the emergence of interactive electronic technologies, all of which are pulling and tugging at the system in unprecedented ways. How we embrace these factors today will determine the nature of education in the next century.

Unfortunately, when we look for leadership from the "experts," we find no consensus. We hear from the optimistic promoters of high technology and the prophets of doom, the back-to-basics advocates and the humanistic innovators. The experts are not in agreement. There is no one answer. Our society is diversifying rapidly and there are as many solutions as there are situations.

Successful strategies and approaches will have to be developed locally — by individual schools and systems relying on their own best judgments regarding the educational needs of their localities, the most likely trends in their future, and the most compelling goals they seek to achieve. The direction of American education must now come from the local level, from people with the courage to face the available choices and to set goals that are consistent with local needs and values.

The Futuring Process described in the first part of this handbook can provide that direction. It gives detailed descriptions, or scenarios, of possible futures. However, the efficacy of the Futuring Process is not in the probability of the scenarios actually happening, but rather in the *process* of developing those scenarios. It forces those who participate in the Futuring Process to deal with the value conflicts that often hinder the development of a clear direction. It opens up discussion that is focused not on the conflicts themselves but on the consequences of one choice or another. Essentially, the Futuring Process is a way of developing consensus among the participants.

The Futuring Process is only one of the available ways for educators to examine the future of their schools. In the first part of this handbook, we provide an example of how it can be used and the scenarios it has produced. The second part includes descriptions of other methods that have been used for similar purposes. The third section lists people and organizations that are involved in futures-oriented projects or programs in their schools.

The very survival of our education system will depend on our ability to accommodate and adapt to the many changes we face. As our society decentralizes, so must our education. No longer can we afford to look elsewhere for answers. We must look to ourselves and to our cooperative efforts.

The Futuring Process

The Futuring Process was developed by Peter Wagschal and graduate students at the University of Massachusetts at Amherst as a tool for the examination of alternative futures. Although many statistical methods have been developed for forecasting probable events, the detailed examination of the consequences of probable or possible events has been less studied. The study of possible futures is important because it forces us to assess the desirability of possible trends and to recognize the values we bring to that assessment. Even if we gain no new knowledge about the probability of the occurrence of forecasted events, the process of developing the scenario gives us a clearer concept of the complex relationships among events. We begin to assess the related events in conjunction with their central trends. This kind of thinking is as important as trying to calculate the statistical probability of an isolated event occurring within the context of an obscure future.

The Futuring Process consists of a series of *diverging* and *converging* techniques that alternately expand and focus the participants' thoughts, eventually resulting in a scenario. This is an intuitive process, not a statistical one. It is fallible, and the process is only as good as the participants themselves. It is also a flexible process that can be used with small groups or extended to the national level.

Futuring begins with the premise that no expert assessment is valuable if it has little or no popular support. The scientists who predicted that nuclear-generated electricity would be "too cheap to meter" failed to recognize the opinions of the people who were to pay for, and live in fear of, that technology. Similarly, public opinion could play a major part in any new developments in education. The Futuring Process works best when there is a diversity of opinion from which to draw. It is recommended that school systems using the process include parents, teachers, administrators, staff, students, and community and business leaders in the project. It is a democratic exercise that blends those opinions into a package on which consensus can be reached. There is room for both expert opinion and public reaction.

Brainstorming

The first step in the Futuring Process is to "brainstorm" a list of trends, either educational or societal, that could affect the future of education. Brainstorming is a simple technique in which participants generate as many ideas as they can, *without evaluation*, in a limited period of time. One or two people record the trends as they are generated. This method encourages building on previous ideas and stretching the mind to include the bizarre. At this stage the emphasis is clearly on quantity, not quality. The results are all reviewed for acceptability afterward, so that the brainstorming atmosphere is, more or less, free of judgment. The members of the Commis-

sion on Schooling for the 21st Century generated 175 trends in just over an hour. From this list, 30 trends were selected for a public opinion survey.

The Delphi Survey

The next task is to identify which trends are perceived by the general public as the most probable, the most desirable, and the most important. To do this, a Delphi survey was designed.

A Delphi survey is performed in several rounds, each including the same questions. After each round, the participants are given information about how the others responded, thereby allowing for "cross-fertilization" of thinking. Each round should achieve more of a consensus than the previous one. It is important to include people with many different points of view in the survey. If the school or organization is small enough, everyone can be included. When estimating the number of returns, anticipate a significant number of nonrespondents for each round.

The Delphi survey used in this project consisted of three rounds, with the means from previous rounds included on each subsequent survey. Comments from the participants were also included after round two. Since this project was concerned with national trends in education, we chose to send the questionnaire to a sample of educators, futurists, and businesspeople. The first round was mailed to 1,200 people, and a 15% rate of return was expected. The actual rate of return was closer to 25%, with the businesspeople sending the fewest returns. Participants were lost through attrition after each round, but by the end of the third round there were 150 respondents remaining.

The participants in the Delphi survey rated the items by probability, desirability, and importance. The following trends scored very highly on the Delphi survey:

Most probable
- increased use of information systems and networks
- increase in median age of U.S. population

Most desirable
- increased awareness of global economic interdependence
- decline in sexist attitudes and structures
- more flexible career choices

Most important
- increased awareness of global economic interdependence
- redefinition of "basics" to include technological literacy, decision making, and problem solving

From the 30 trends on the questionnaire, these six were selected for further study.

The Futures Wheel

The futures wheel is a technique that generates likely consequences of a trend. For each immediate consequence, taken independently, several more likely consequences are generated. The process is repeated until at least four levels are reached. (See page 8 for an example.) The futures wheel is the heart of the Futuring Process. It is in

the wheel that the full ramifications of the trends become apparent. Therefore, it is important to have many different points of view represented among the participants. Whereas in brainstorming there is no agreement needed to include a trend, constructing a futures wheel requires *unanimous agreement* before a consequence can be included. Therefore, every participant should agree that the finished wheel is filled with likely consequences. However, in order to keep the process from taking too long, a minimum of discussion should be allowed. A strong, task-oriented leader helps the futures wheel along.

Each of the six trends identified as significant on the survey became the central trend of a futures wheel. For our purposes, three first-level consequences with two consequences for each subsequent one, taken to the fourth level, is sufficient. This gives a total of 45 consequences for each of the six central trends. Each futures wheel included in this handbook is with the scenario it helped to develop.

Cross-Impact Matrices

Following the futures wheels, we need to identify which consequences tend to cancel each other out and which are reinforced by others. The best way to measure these interactions is through a cross-impact matrix. Each consequence is set up in a matrix against the other elements in the futures wheel (see Figure 1). The participants fill the matrix by asking, "If the trend on the vertical axis occurs, will it make the trend on the horizontal axis more likely to happen (+) or less likely to happen (−)?" Note that because some trends affect, but are not affected by, other trends in the matrix, the results are not reciprocal. In other words, if A makes B more likely to occur, B does not necessarily make A more likely to occur (see Figure 1). A (0) in-

	A. more people work at home	B. less air pollution	C. higher birth rate	D. increase in auto sales
1. more people work at home		+	+	−
2. less air polution	0		0	0
3. higher birth rate	+	0		+
4. increase in auto sales	0	−	0	

Figure 1. An example of a cross-impact matrix.

dicates uncertainty or no interaction. Some methods also include (++) and (−−) for emphasis when the results are extremely likely or extremely unlikely to occur.

When the matrix is complete, read vertically down each column and add the pluses and subtract the minuses. The totals give an indication of the likelihood of the trend at the top of the column occurring, given its interaction with all the trends listed on the side of the matrix. In the example given, the total of the "higher birth rate" column is a (+), meaning that although several trends serve to cancel each other, the overall interaction is positive.

These matrices can be quite tedious to complete when they include many elements. There is a shorter method in which only the elements in the same ring are compared. This gives similar results with one-third the time and effort.

The matrices for the six trends were completed and totaled, resulting in a clearer picture of which consequences are more likely than others to occur.

Scenarios

With the information from a cross-impact matrix and a touch of imagination, the elements of the futures wheel can be synthesized into a written scenario that draws together many seemingly unconnected consequences into a conceptual image of the central trend. Scenarios can be written in the present tense or in the past tense as if by a "future scribe." Naturally, the larger the futures wheel, the more detailed the scenario; and the matrix becomes more tedious to complete. It is best to find a compromise that is suitable for the needs of the group.

The task of writing scenarios forces the participants to analyze, group, and compare trends and to identify any internal inconsistencies. The author usually connects the future scenario to the present in some way, thereby showing how to "get there from here." Another advantage to scenario writing is that it brings to the forefront the "values issues" that often arise. It forces us to examine our positive and negative feelings about some impending trends.

When finished with the Futuring Process, the result is not only a written scenario but also knowledge about the interconnectedness of events. Once this is done, a consensus often develops on determining the direction to be pursued.

The process can be modified to accommodate groups of different sizes or variable time frames. For example, the Delphi technique need not be used if the group is small enough to assemble in one place. The futures wheel can be shortened or lengthened to fit the amount of time available. Each piece of the Futuring Process can be used independently for special situations. We recommend that educators use the process on a small scale — a schoolwide or districtwide level — and use narrow, clearly defined trends. The success of the Futuring Process will be enhanced if many different points of view are represented.

What follows is the culmination of the Futuring Process performed by the Phi Delta Kappa Commission on Schooling for the 21st Century and the Futures Studies Program at the University of Massachusetts. We hope the reader enjoys and digests these scenarios. Keep in mind that these are not predictions, but rather they are forecasts of futures that might come true, either in part or in their entirety. Think about the aspects of each scenario that are appealing, and then, with that as a goal, perhaps there will be a way to make the future real.

Scenario #1: The Information Revolution and the Backlash

increased use of information systems and networks rated "highly probable"

The much-heralded information revolution has become a reality. The impact of computers has filtered down into the mainstream of society. The masses have access to, and take advantage of, the potential of the still-emerging electronic information networks to bring about large-scale social and political transformation. Work and school are moving into the home with increasing frequency. Groups of many kinds, some political and some social, form networks for more rapid transfer of information.

The popularity of electronic libraries, public information centers, and information retrieval services has made the field of "information management" the fastest growing segment of the economy. High technology industries of all kinds are booming, and the "smokestack" industries have either shut down or moved to Third World countries. Productivity is high and the economy is expanding and diversifying. The cash economy has been virtually eliminated, replaced by a variety of credit systems. Roughly a third of the work force is employed in work-at-home situations. In general, the standard of living is high; however, there is a widening gap between the technological and nontechnological classes that is feeding a subtle unrest.

The anxiety level is very high, and people feel somewhat vulnerable. There is a sense of "time compression" caused by the rapidity of information flow. People feel as if they are losing control over the pace of their lives. In some ways, there is too much information, a kind of "overload" that has led to an increase in stress. This stress and the need for an easy escape have reinforced the abuse of alcohol and other drugs as major societal problems. Fortunately, more emphasis has been placed on quality mental health services and the teaching of skills for coping with these problems. Still, many social interactions are characterized by protectiveness or defensiveness regarding personal space.

For some people, this unrest has created a humanistic backlash to the rapid advancement of high technology. A small number of people withdraw from mainstream society, preferring to let the high-tech revolution pass them by. Many others face the personal conflict of how to join the new society and maintain their humanism. Gradually people are beginning to use the new technologies in ways that do not alienate or dehumanize.

The information explosion has increased the fear of privacy invasions. Initially, reports came from other countries, particularly South Africa and the Soviet Union, of misuses of the credit exchange system for the identification and surveillance of individuals. However, when U.S. government agencies were reportedly undertaking similar activities and finding immunity in legislation designed to protect national

security, the concern for privacy rights jelled into a significant political issue. The government then made a serious mistake by announcing plans to create a national identification system using Social Security numbers, and the public outcry quickly became a potent political force. Ironically, it was the electronic technologies that gave greater communications capabilities to the growing number of grassroots political organizations. Special interest and citizens groups have networked into strong coalitions that work for legislation to protect privacy rights. Even a constitutional amendment has been introduced to define and protect the rights of privacy.

There is another backlash underway. It stems from the perceived homogenizing of cultures because of the increase in available information. The shrinking globe has encouraged a whole set of common traditions and standardized cultural patterns to develop. A resistance to the "global melting pot" has arisen as people struggle for a cultural identity. There is a re-emphasis on "roots" and a pride in belonging to one of

Figure 2. Futures wheel for scenario #1.

many "hyphenated-American" groups such as Asian-Americans or Hispano-Americans. Political exploitation by one group over another is often evident, and there have been reports of violent clashes. The Ku Klux Klan has made inroads into communities previously considered resistant to the Klan.

Children receive an education that has both a technological and humanistic focus. The technological curriculum for the earliest grades contains training on the computer in conjunction with an emphasis on information management and critical thinking skills. The humanistic component includes values clarification techniques, coping skills, stress management training, and a new emphasis on mental health education. There is also a focus on cultural awareness and identity. As a response to the emphasis on communicating with computers, new classroom activities now focus on the exchange of ideas between people.

Recently, there has been an increase in the number of children being educated at home. Because there is a great diversity of lifestyles, the "factory model" of schooling is no longer applicable for many. Home education has become popular and allows more flexibility in the curriculum.

So, the information revolution brings with it a humanistic backlash. The privacy issue and various other social problems spur social action that helps to transform many aspects of the country and the world. The dual characteristics of society are reflected in the kind of education we give our children, which contains a strong humanistic component as well as important training in the emerging technologies.

Scenario #2:
The Aging Market

increase in the median age of the U.S. population
rated "highly probable"

The median age of a population increases for two reasons: people live longer and fewer babies are born. Both of these trends have an impact on many dimensions of this society, especially on the marketplace.

With an aging population comes a shift in consumption patterns. As children of the "baby boom" grew up, new products and services appeared that were designed specifically for older age groups. Naturally, marketing strategies changed to reflect the changing demographics. Advertising became less youth-oriented and developed a narrower focus, appealing to more specific target audiences such as ethnic or cultural groups. The greater diversity of lifestyles became a source of pride, and the media fostered this trend by appealing to people's individuality.

The economy is decentralizing, and more jobs are created as the market changes. High technology spin-off industries spur economic growth and provide the means for a greater diversity in products. Multi-job employment packages and other options appear as people seek greater career flexibility. This trend has created a new service industry centered on retraining and re-educating. To a larger degree than ever before, education has become a lifelong process; and people see retraining as part of the trend toward multiple careers. Some of this retraining takes place at the workplace, but the concept of "retraining" has become more than just fitting someone into a specific job. It has taken on a broader educational meaning, so that the line between "retraining" and "re-education" has become unclear. The links between schools and the business community are much stronger because their roles and needs overlap to a greater degree. The concept of "educator" begins to lose its narrow focus on schools and expands to include more community and industrial positions. A new credentialing process has been set up to accommodate the many new kinds of educators.

"Retirement" has come to mean many different things. Since the number of young people is low, mandatory retirement no longer exists; and some people are working well into their seventies. Others opt for less strenuous pursuits and earlier retirement. The leisure industry is expanding, partly because of this trend. Also, many retirees pursue learning as a hobby to keep their minds sharp and active.

As the population ages, there is a greater understanding of preventive health measures. Greater attention is paid to general physical fitness and a healthy diet. The demand for natural and organic food increases as a greater consciousness of nutrition develops. Schools and businesses cooperate to develop better comprehensive health curricula. Many new employment opportunities are created in the health services and in services for the aging.

The aging population brings a new flexibility to career options and expansion to some sectors of the economy, particularly those that deal in products and services for an aging population, as well as in the fields of health and nutrition. As people seek new options, education takes on a new role in retraining people for new careers not only in high technology but in all careers.

Figure 3. Futures wheel for scenario #2.

Scenario #3:
Society Strains to Change

decline in sexist attitudes and structures
rated "highly desirable"

As more women are employed, the traditional stereotypes of passive, incompetent, and weak women dissolve. Curiously, it is advertising, the longtime bastion of female exploitation, that reinforces our changing perceptions of women. Businesses increasingly redirect their attentions to attracting the "new woman." Consequently, the population as a whole begins to see women differently. New products and services aimed specifically at females thrive as the female population commands more spending power.

However, exploitation has not disappeared. New stereotypes have developed, and consumer advocacy groups are still faced with a multitude of "offensive advertising" complaints. Some people feel that being a woman has lost its "specialness" and that women's privacy has been invaded. Even so, the general awareness of sexism has increased, and women are gaining greater acceptance in nontraditional roles.

The burgeoning number of women in leadership positions has brought new challenges to organizational structures. Many men have difficulties in accepting female leadership. The resulting stresses bring on a rise in escapist behavior that is manifested in its most destructive form: the abuse of alcohol and other drugs. Sometimes the stress is transferred to spouses and children, with a rise in the incidence of wife and child abuse. There is a greater need for mental health services and many companies have begun to offer support services specifically addressing male/female professional conflict.

Generally, however, people have adapted well to the changes, and there is a realization that the quality of leadership has improved. With both men and women in leadership roles has come a greater diversity of leadership styles. Workers have learned to adapt to many different styles of leadership.

Education both reflects and encourages the movement toward a less sexist society. Educational materials reflect a less sexist attitude and portray competent women and girls in nontraditional and productive employment. Men and boys also are freed from traditional stereotypes and are shown engaging in nontraditional activities. Some of the new materials are criticized for portraying society as "too homogeneous" and not allowing for individual differences, thus placing new emphasis on the recognition of individuality and heterogeneity.

Children are also made aware of changing attitudes by example as the structure of the education system changes. More women enter higher-level administrative positions, and more men go into early childhood and elementary education. Naturally, there are struggles for power as the systems fluctuate to accommodate the new roles; but generally, education systems model the changes well.

Social changes relating to a sexist society come slowly. Some segments of society change more rapidly than others; the vestiges of male domination still manifest themselves in subtle ways. Still, women and men make significant strides toward equality, and acceptance of changing social roles increases. Education reflects these changes, both in the curriculum and in the structure of the systems.

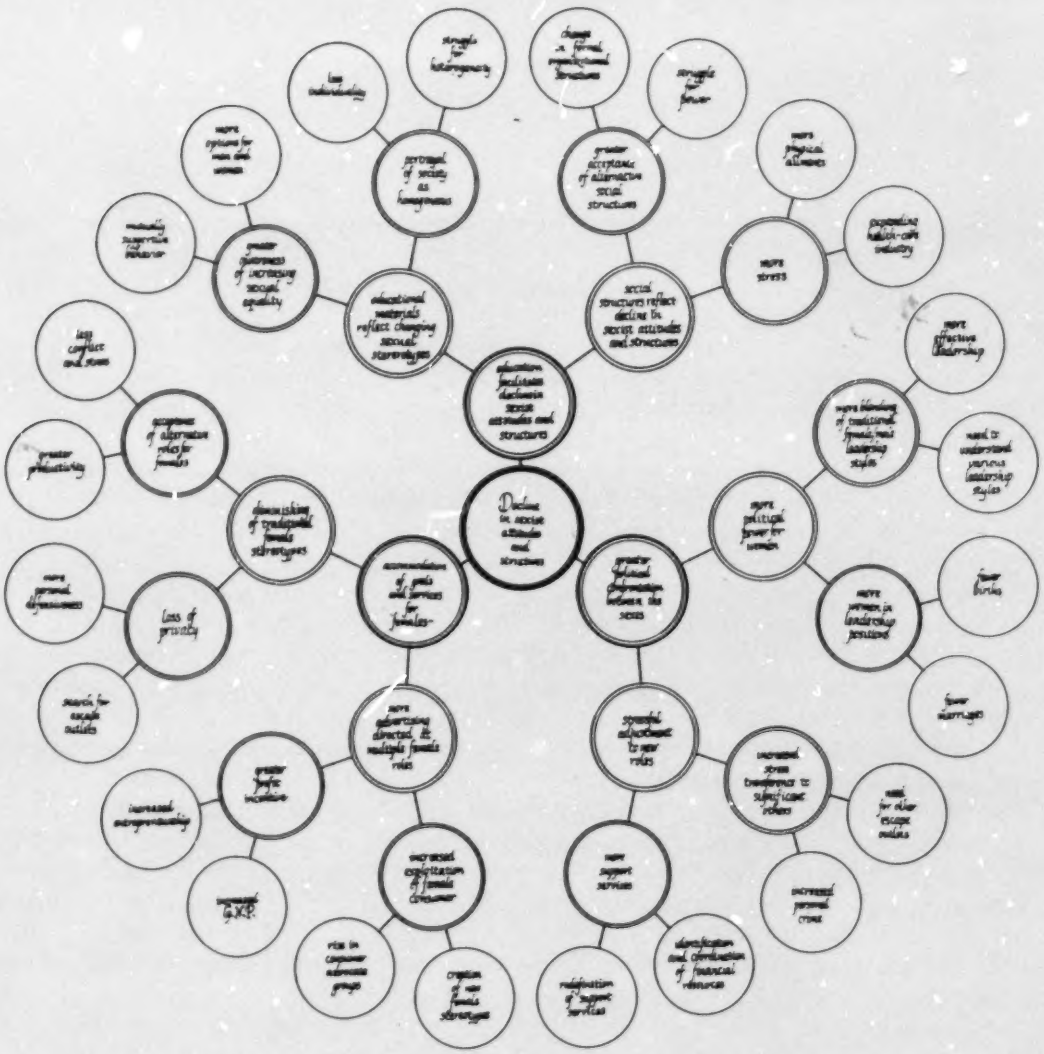

Figure 4. Futures wheel for scenario #3.

Scenario #4: Diverse Workstyles

more flexible career choices rated "highly desirable"

As medical advances increase the average life expectancy, the length of our working lives also increases. However, fewer people stay with a single career; flexibility in career choices and multiple careers become the norms. Productivity is higher as the level of job interest increases. The incidence of burnout declines. There is a decrease in worker loyalty and commitment to the company, but businesses respond by offering a greater share of company profits in the form of incentive pay, profit sharing, and other worker-motivation plans. These plans, in concert with general improvements in mental and physical health, serve to increase productivity. Producing goods or services for one's own consumption increases dramatically as people find ways to be productive during retirement or between careers. The service sector of the economy is booming, and a sharp increase in the number of small businesses signals the rise of the "new entrepreneurs."

The general health of the populace, both mental and physical, continues to improve because of many different factors. One of the most significant is an improvement in the environment. More and more people are using interactive technology to work in their homes, and the resultant decrease in automobile use has had a major effect on air quality. With the decline in the "smokestack" industries, air and water pollution are no longer severe problems. There has been a revival of major cities as people seek leisure activities that involve socializing with large numbers of people. The cities are cleaner and quieter and are generally popular places in which to live. The traditional family unit has again become the societal standard. Since working at home is popular and work hours have become more flexible, parents are finding more time to spend with their children, and families are becoming closer. Children often pursue one of their parents' careers. The divorce rate has dropped, and the incidence of childhood and adolescent trauma has also decreased significantly. Generally, the population is more emotionally secure and stable.

Because of the many career opportunities, education has taken on a new direction. There is less specialization at the lower levels, where a globally oriented and generalized curriculum has become standard. Thinking skills and problem solving are stressed. However, at the collegiate and graduate levels there is an increased demand for specialization in order to serve the technological needs of business and industry. Even though many people pursue lucrative careers in science and technology, there are shortages of qualified personnel in some disciplines. There is a movement away from standardized testing and toward competency-based evaluative instruments.

Flexibility in career choices encourages a healthier, more productive society. Workers share in the profits to a greater extent, and they respond with enthusiasm for their jobs. The return of the tight-knit family unit and cleaner, safer cities creates a more secure environment for children. In school, the standard curriculum includes an emphasis on general knowledge, thinking skills, and a global orientation.

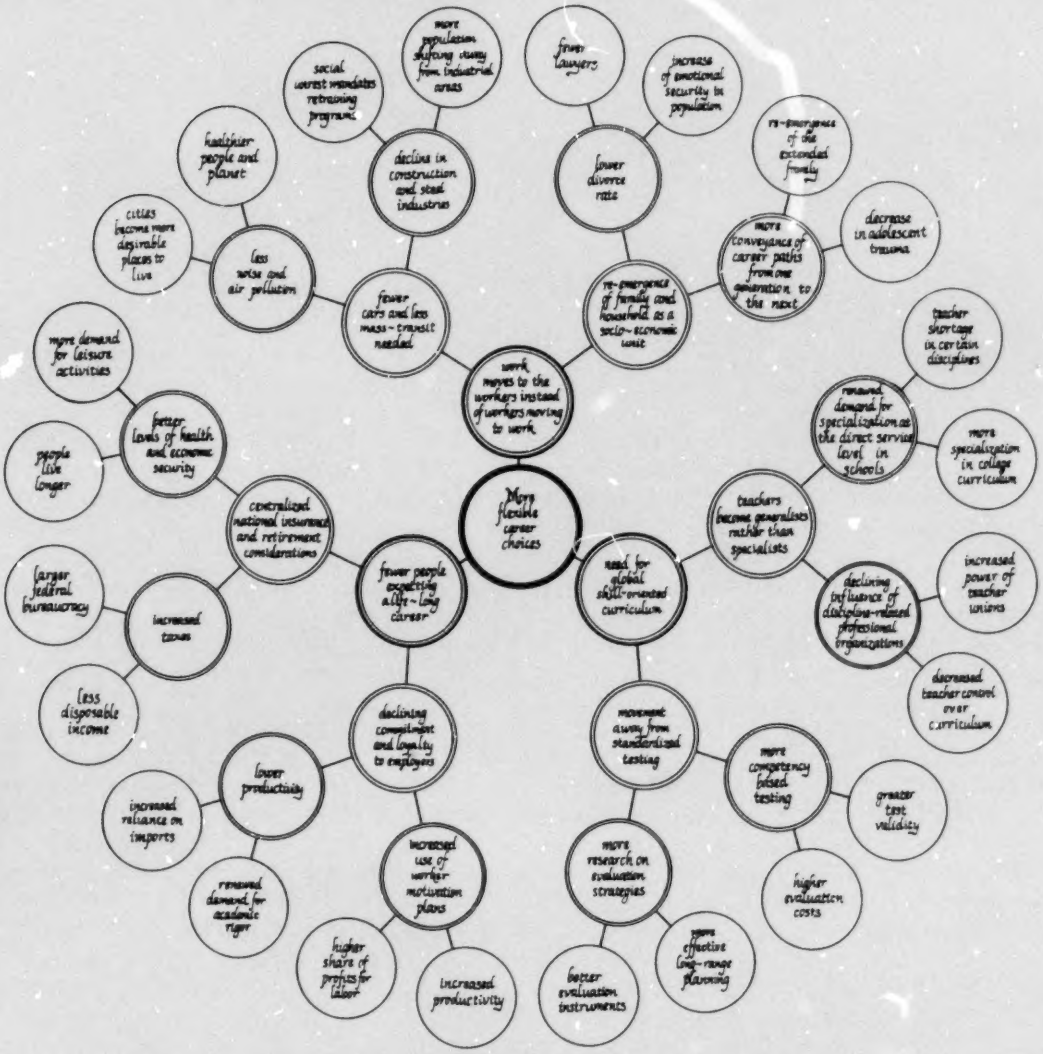
More flexible career choices
work moves to the workers instead of workers moving to work
fewer people expecting a life-long career
centralized national insurance and retirement considerations
greater levels of health and economic security
more demand for leisure activities
people live longer
larger federal bureaucracy
increased taxes
less disposable income
fewer cars and less mass-transit needed
less noise and air pollution
healthier people and planet
cities become more desirable places to live
decline in construction and steel industries
social unrest mandates retraining program
more population shifting away from industrial areas
re-emergence of family and household as a socio-economic unit
fewer divorce rate
fewer lawyers
increase of emotional security in population
more convenience of career paths from one generation to the next
re-emergence of the extended family
decrease in adolescent trauma
need for global skill-oriented curriculum
teachers become generalists rather than specialists
renewed demand for specialization at the direct service level in schools
teacher shortage in certain disciplines
more specialization in college curriculum
declining influence of discipline-related professional organizations
increased power of teacher unions
decreased teacher control over curriculum
declining commitment and loyalty to employers
lower productivity
increased reliance on imports
renewed demand for academic rigor
increased use of worker motivation plans
higher share of profits for labor
increased productivity
movement away from standardized testing
more competency based testing
greater test validity
higher evaluation costs
more research on evaluation strategies
more effective long-range planning
better evaluation instruments

Figure 5. Futures wheel for scenario #4.

Scenario #5:
Redefining Education

redefinition of "basics" to include technological literacy, decision making, and problem solving rated "highly important"

The increasing use of computers in schools brings about the creation of networks of individuals and organizations to aid in the education process. The exchange of curriculum ideas and educational software keeps teaching fresh and innovative. Administrators find the networks especially useful for important linkages with businesses and other community resources.

The computer enjoys wide popularity and is used in homes for business, educational, and leisure activities. Naturally, the schools respond by spending more money on education technology, particularly for more and better software and for inservice training. This fact also means that there is less money for some other things, one consequence being that the maintenance of the schools suffers. Since businesses and industry feel the need for more trained personnel, more money comes to schools from private sources than ever before. There is less reliance on print media as the electronic media begin to replace them.

There is a strong movement away from the standardized, centrally planned curriculum and toward a rapidly changing, locally developed curriculum. This kind of curriculum is designed to meet the needs of the community and allows for a greater degree of input from teachers, parents, and businesses. It is constantly in flux, being revised often to meet the needs of the changing environment. In general, schools have become more decentralized, thus allowing a greater degree of community and teacher involvement in the decision-making process.

The changing curriculum requires larger expenditures for inservice training. Teachers, community leaders, and businesspeople are involved in providing quality inservice education. This training not only focuses on better uses of computer technology in the classroom but also on better ways to teach the nontechnological curriculum that includes problem solving, critical thinking, and decision-making skills.

Increasingly, industry finds itself in the education business because it must train individuals for more complex and specialized jobs. Personnel turnover increases in the schools as the link between education and industry strengthens. Educators leave the schools to find better pay in the private sector, while many businesspeople and other members of the community seek a second or third career in education. There are accountability problems, and the accreditation process is overhauled. The demand for higher salaries in public education increases.

As a strong alliance with the private sector develops, there are new resources and networks for the schools to tap. Increased community involvement in the schools leads to a curriculum that is designed to meet local needs.

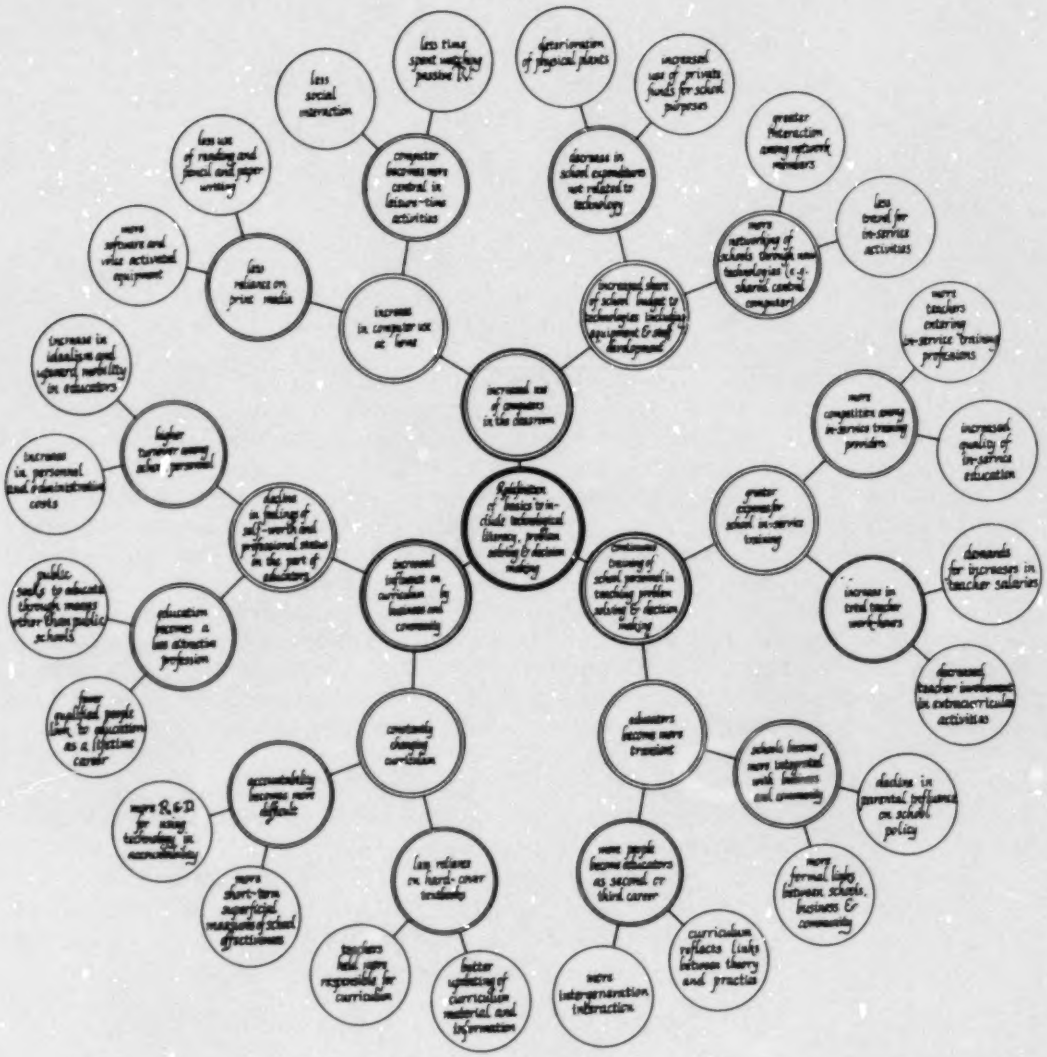

Figure 6. Futures wheel for scenario #5.

Scenario #6: National Conflict and Global Awareness

increased awareness of global economic interdependence rated "highly important" and "highly desirable"

Dwindling supplies of important natural resources, such as oil and uranium, cause economic and political turmoil and strain U.S. foreign policy. Conflicts flare as Americans try to reconcile their nationalism with the realization that the world is shrinking and nations can no longer prosper in isolation.

Economically, the U.S. has become increasingly dependent on foreign nations for raw materials. Also, many multinational corporations use the cheaper labor in developing countries to keep operating costs low. The technology that is exported to these developing countries eventually becomes their trump card in establishing their own political power base. The U.S. government first re-evaluates its trade agreements in terms of creating fair and reasonable policies, but soon the voices of nationalistic organizations and big business begin to put greater pressure on the government. Cries for legislation to protect U.S. business interests in the face of international competition fall on increasingly sympathetic ears in Congress. Eventually, protectionist legislation is passed over a presidential veto. Strong reaction from foreign governments leads to a re-evaluation of U.S. national defense priorities, and the protection of vital natural resources becomes a major political issue.

Extreme reactions from both sides of the issue, fueled by the news media, create an atmosphere of dissent in the U.S. Jingoistic attitudes from some organizations lead to ethnic violence in many major cities, especially in New York, Los Angeles, and Miami. Peace groups stage civil disobedience actions and other protests in response to a perceived military buildup. These nonviolent demonstrations are often met with counterdemonstrations and wind up in bloodshed. There is an increase in government monitoring of groups and individuals, and reports of civil rights violations abound.

Through all of the turmoil, there are moderating influences from those who see the opportunity for global unity. A new desire to understand other cultures inspires many people. Programs like the Peace Corps regain popularity, and they no longer cater primarily to the young. Many retirees find a stimulating second-career experience in foreign cultures. The United Nations gains in importance and respect as governments feel pressured to justify morally their actions in the eyes of the international community. The U.N. serves as a positive, constructive influence in the resolution of conflicts. New international alliances and blocs help to depolarize world politics.

Reflecting society's hopes rather than its fears, the schools grasp the one-world vision. A new emphasis is placed on cultural studies and foreign languages. Seeing better opportunities with improved foreign relations, the business community supports

the push for a more multilingual, cross-cultural education in the schools. The social studies curriculum is expanded and foreign language requirements increase in most school systems across the country. The number of cultural exchange programs run by both schools and community groups increases dramatically. Debate ensues over the curriculum and what languages should be taught. The need to hire new teachers for new curriculum areas creates professional conflicts with some older faculty. The school day and the school year are extended in hopes of increasing educational excellence.

So, while the spirit of global interdependence increases among parts of the population, the reactions are strong and vocal. Conflict and controversy, both international and within the U.S., mark the beginning of a transition to a greater global understanding. Through language programs and cultural exchanges, the schools help this transition by trying to create a better global awareness in the next generation.

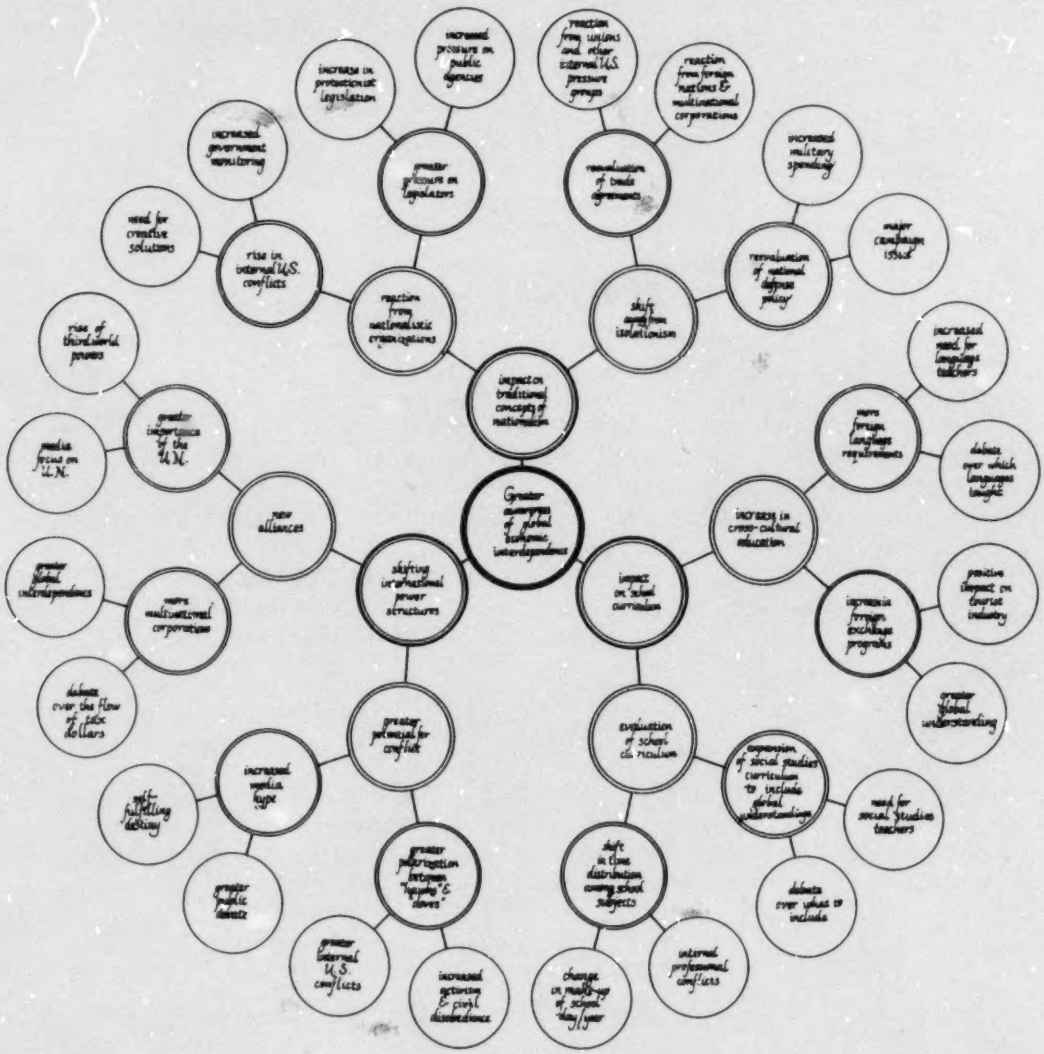
Greater awareness of global, economic interdependence
impact on traditional concepts of nationalism
reaction from nationalistic organizations
shift away from isolationism
increased pressure on public agencies
increase in protectionist legislation
greater pressure on legislators
reaction from unions and other internal U.S. pressure groups
reaction from foreign nations & multinational corporations
renegotiation of trade agreements
increased government monitoring
need for creative solutions
rise in internal U.S. conflicts
increased military spending
major conflicts (ex. Iran)
reevaluation of national defense policy
rise of third world powers
greater importance of the U.N.
media focus on U.N.
increased need for language teachers
more foreign language requirements
debate over which languages taught
new alliances
shifting international power structures
greater global interdependence
more multinational corporations
debate over the flow of tax dollars
impact on school curriculum
increase in cross-cultural education
increase in foreign exchange programs
positive impact on tourist industry
greater global understanding
greater potential for conflict
increased media hype
self-fulfilling destiny
greater public debate
greater polarization between "superior" & "inferior" races
greater internal U.S. conflicts
increased tensions & civil disobedience
evaluation of school curriculum
expansion of social studies curriculum to include global understanding
need for social studies teachers
debate over what to include
shift in time distribution among school subjects
change in make-up of school day/year
internal professional conflicts

Figure 7. Futures wheel for scenario #6.

Forecasting Techniques

Obtaining a composite view of the future requires the use of several complementary forecasting techniques. Though the number of these techniques is large, futurists identify three basic approaches and categorize individual methods accordingly. Joseph (1974) summarized these three approaches as follows:

1. *Exploratory Forecasting.* This approach emphasizes the identification of trends as well as possible opportunities or problems related to the future.
2. *Normative Forecasting.* The predominant activities in these techniques are discovering and setting norms for the future. Inventing desired alternative futures usually accompanies norm setting.
3. *Forecasting Through Modeling/Simulation.* This approach involves gaining an understanding of the structure of the future by analyzing natural laws (physical, social, and environmental) and assessing their impact.

Trend Extrapolation

This is a method for projecting the magnitude of a present trend into the future.

Method. A variable is plotted graphically over time yielding a curve, which then can be extended into the future.

Advantages. Trend extrapolation is simple and inexpensive, quickly understood, graphic, and often close to being correct.

Limitations. A basic assumption of trend extrapolation is that the same factors that operated in the past will continue to shape the future. Because of this assumption, trend extrapolation does not provide for trend reversals or changes in societal values.

For Additional Information

Dickson, P. *The Future File.* New York: Avon Books, 1977.

Hencley, S.P., and Yates, J.R. *Futurism in Education.* Berkeley, Calif.: McCutchan Publishing Corporation, 1974.

Pulliam, J.D., and Bowman, J.R. *Educational Futurism — In Pursuance of Survival.* Norman: University of Oklahoma Press, 1974.

Trend Impact Analysis

This technique is a continuation of trend extrapolation. The purpose of trend impact analysis is to identify and evaluate the probability of events that could have an impact on a particular trend.

Method. First, a team of researchers generates a list of possible and relatively significant events that could affect the trend. Estimates of the probability, time frame, and degree of impact on the trend of the events listed by the research team are stated as positive or negative percentages. Then, the estimated information is entered on a computer. After calculating the probabilities, impacts, and estimates of time, the computer simulates the probable impact on the trend if each event occurs. The result of this calculation is a newly extrapolated mean curve.

Advantages. Trend impact analysis is designed to reduce surprise with regard to the future by forecasting the effects of multiple influences upon a trend. The computerized projection can be tested and revised.

Limitations. The results of a trend impact analysis are based heavily on the subjective judgments of the researchers who use this technique. And although a computer is used to interpret the estimates made by the researchers, making those required estimates is time-consuming.

For Additional Information
The Futures Group, Inc.
76 Eastern Boulevard
Glastonbury, CT 06033
(203) 633-3501

Dickson, P. *The Future File.* New York: Avon Books, 1977.

Delphi Forecasting

The Delphi technique is an intuitive forecasting method based on the consensus of experts in a given field or problem area. It can also be used to conduct a public opinion survey on the impact of various trends.

Method. Each member of the group makes forecasts individually, often through the use of a questionnaire. The results of this first round of forecasting are collected and returned to each member of the group, who are then free to revise their original forecasts or to explain their divergent positions. The process of collecting forecasts and distributing the results continues until each member understands all other positions and all are satisfied with their individual positions.

Advantages. The Delphi technique often leads to consensus and defended minority positions. It is useful when the input of consultants is desired, and it can be used to obtain information from a large number of people. This technique focuses attention on the desired topic areas and permits a high degree of control by those conducting the survey. The Delphi technique has the added advantage of usually being regarded as interesting and informative by the participants.

Limitations. There are five major limitations to the Delphi technique. First, the clarity of the questionnaire or survey tool can affect the results. Also, the willingness of the panel to reconsider their original opinions will determine whether a consensus can be reached. The Delphi technique can suppress extreme points of view by forcing a consensus, thereby limiting the range of the forecasts. In addition, the value of the results depends on the competency of the participants. Finally, the results of this technique are intuitive rather than scientifically obtained.

For Additional Information

Cypher, Frederick, R., and Gant, Walter L. "The Delphi Technique: A Case Study." *Phi Delta Kappan* 52 (January 1971): 272, 273.

Dickson, P. *The Future File.* New York: Avon Books, 1977.

Helmer, O. *Analysis of the Future: The Delphi Method.* Santa Monica, Calif.: Rand Corporation, March 1967, pp. 7-36.

Hencley, S.P., and Yates, J.R. *Futurism in Education.* Berkeley, Calif.: McCutchan Publishing Corporation, 1974.

Weaver, W. Timothy. "The Delphi Forecasting Method." *Phi Delta Kappan* 52 (January 1971): 267-71.

Weaver, W. Timothy. *The Delphi Method.* Syracuse, N.Y.: Education Policy Research Center, 1970.

Cross-Impact Matrix

This method estimates the probability of occurrence of an event and the impact this occurrence could have on other events.

Method. Construct a matrix with events, trends, consequences of trends, etc., along both the horizontal and vertical axes. A computer is useful for analyzing large numbers of items. You will need to determine an appropriate "shorthand" for describing the interactions between items listed on the matrix. For example, if the trend on the vertical axis occurs, will it make the trend on the horizontal axis much more likely to happen (++), more likely to happen (+), less likely to happen (−), or much less likely to happen (−−)? A (0) is often used when the direction of the interaction is unknown or uncertain.

Advantages. A cross-impact matrix clearly demonstrates that future events are seldom discrete and are usually interrelated, forcing the recognition of relationships that might otherwise be overlooked. The cross-impact matrix also can be used in conjunction with other methods.

Limitations. Determining the direction of the interactions on this matrix is a subjective process. Also, without a computer the analysis of a large number of matrix items can be tedious.

For Additional Information

Hencley, S.P., and Yates, J.R. *Futurism in Education.* Berkeley, Calif.: McCutchan Publishing Corporation, 1974.

Rochberg, R.; Gordon, T.J.; and Helmer, O. *The Use of Cross-Impact Matrices for Forecasting and Planning.* Middletown, Conn.: Institute for the Future, 1970.

Wagschal, P.H. "Futuring: A Process for Exploring Detailed Alternatives." *World Future Society Bulletin* (September/October 1981): 25-30.

Force Analysis

Force analysis provides a means for identifying and assessing the future nature and impact of forces (events, trends, issues, etc.) likely to cause institutional change.

Method. A topic for consideration is selected by the forecasting team, e.g., student achievement. Knowledgeable persons not on the forecasting team identify forces related to the topic, and the forecasting team selects a number of these forces to be projected into the future. The team then writes descriptions of these forces that in-

clude their past nature and previous influence on the topic. Finally, the team forecasts the future nature of each force and predicts its future impact on the topic.

Advantages. Force analysis is both simple to perform and practical. It is a good method for beginners to use, and it is useful for considering short-range futures. This technique also helps the participants to gain a better understanding of the factors that can influence the future.

Limitations. Force analysis depends on the subjective insights of the participants. Therefore, the resulting descriptions of the future will only be as good as those insights.

For Additional Information

Amara, R.C., and Salancik, G.R. "Forecasting: From Conjectural Art Toward Science." *Futurist* 6 (June 1972): 112.

Technology Assessment

Technology assessment is an interdisciplinary technique that helps persons involved in futures planning to anticipate and analyze the potential impacts of new technologies on society.

Method. Persons using this technique first identify and describe the technology to be assessed. They then make assumptions about the future conditions of society in which the impacts might be manifested and identify the impact areas or affected parties, for example, segments of society, population groups, institutions, etc. After these assumptions have been made, the participants evaluate the impacts according to probability, magnitude, direction, and duration. The participants then identify possible policy options and decision makers that might affect the impact of a technology on society.

Advantages. The technology assessment technique emphasizes the relationships between technological development and social change. It is interdisciplinary in approach and can be used in conjunction with other forecasting techniques. This technique is useful both for assessments of the impact of a technology on a single community or institution and for more global types of assessment.

Limitations. Because of the lack of a general theory to explain the relationships between technology and social change, the results of this forecasting technique are entirely dependent on the assumptions of the participants.

For Additional Information

Committee on Public Engineering Policy, National Academy of Engineering. *A Study of Technology Assessment.* Report to the U.S. House of Representatives Committee on Science and Astronautics. Washington, D.C.: Government Printing Office, July, 1969.

National Academy of Sciences. *Technology: Processes of Assessment and Choice.* Report to the U.S. House of Representatives Committee on Science and Astronautics. Washington, D.C.: Government Printing Office, July, 1969.

Relevance Tree and Contextual Map Forecasting

These techniques enable the participants to describe networks of alternative pathways for reaching selected future goals or avoiding undesirable ones. The trees

and maps generated by these techniques graphically show a logical sequence of events together with their interrelatedness.

Method. After a goal is identified, the participants describe logical, sequential steps that outline possible courses of action for attaining the goal. These steps are then placed on a relevance tree (see Figure 8) or contextual map to show graphically their relationships.

Advantages. These techniques help participants to plan future actions and decisions for reaching a desired goal, thereby giving the participants a measure of control over the future. The participants can identify precursory events and deduce short-range actions, decisions, and implications from long-range goals. The use of these techniques can also highlight the relevance of multiple forecasts, as well as identify resources that can be used in reaching a desired goal.

Limitations. Instead of helping those involved in futures planning to adapt to trends that may influence the future, the use of these techniques can lead to a biased manipulation of approaches, resources, and decisions in order to attain a desired goal. Those using these techniques tend to concentrate more on existing possibilities than on future ones.

For Additional Information

Hencley, S.P., and Yates, J.R. *Futurism in Education.* Berkeley, Calif.: McCutchan Publishing Corporation, 1974.

Rosove, P. *An Analysis of Possible Future Roles of Education as Derived from a Contextual Map.* Santa Monica, Calif.: System Development Corporation, 1968.

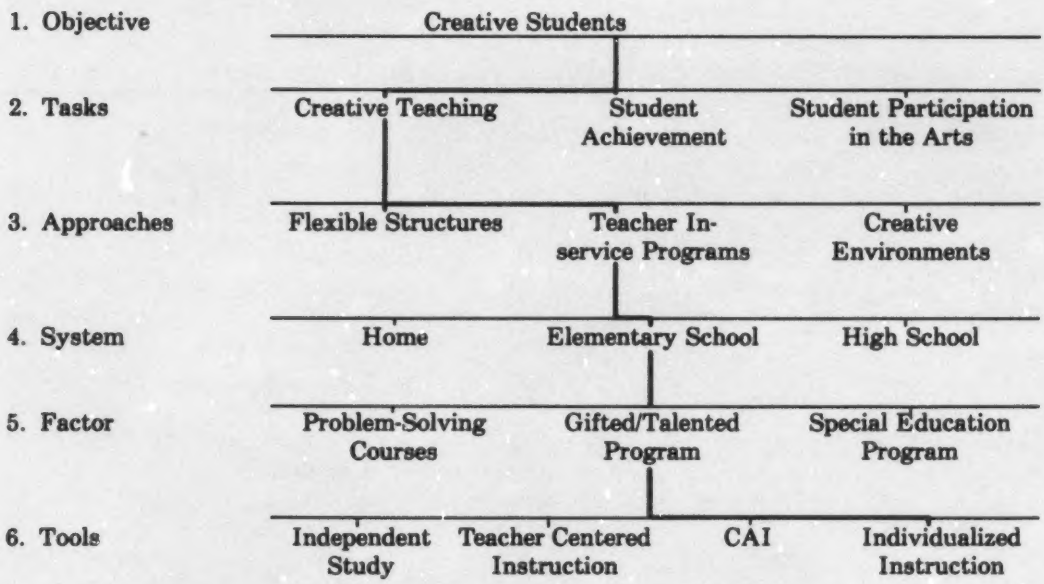

Figure 8. Example of relevance tree.

Simulation/Gaming

This is a process involving computer simulated events of situations, which provide analyses of alternative futures and their possible impacts.

Method. A replica of some system (e.g., the national economy, the energy industry, or brain research) and a set of mathematical formulas describing its operation are created and programmed into a computer.

Advantages. Simulation can compress time. That is, a year can be simulated in seconds. Simulation can also allow for risk-free experimentation with variables, called gaming.

Limitation. The production of the simulations is time-consuming and costly.

For Additional Information

Dickson, P. *The Future File.* New York: Avon Books, 1977.

Pulliam, J.D., and Bowman, J.R. *Educational Futurism — In Pursuance of Survival.* Norman: University of Oklahoma Press, 1974.

Scenario Development

This is a strategy for generating the details of alternative futures that have been identified through other forecasting techniques.

Method. Isolate one or several alternative futures for which the scenario is to be developed. Then, imaginatively and in great detail, construct a sequence of events from the present to the alternative future being considered.

Advantages. Scenario development focuses on cause and effect relationships. By developing a scenario for each identified trend, those using this strategy can generate a large number of detailed alternative futures. Also, by focusing on all possible effects of a trend, those using this technique will be made aware of alternatives that otherwise might be overlooked. Scenario development is useful for exploring possible social, attitudinal, and values-oriented futures. By paying attention to these possible futures, those involved in setting policy can engage in inventive planning.

Limitations. Because this method is highly subjective, scenario writers can be internally inconsistent. Also, the details of the scenario can be too far removed from reality to be useful.

For Additional Information

Dickson, P. *The Future File.* New York: Avon Books, 1977.

Hencley, S.P., and Yates, J.R. *Futurism in Education.* Berkeley, Calif.: McCutchan Publishing Corporation, 1974.

Futuring

Futuring is a multistage process for generating detailed alternatives. The process illustrates how several forecasting techniques can be employed in concert.

Method. In the first step of the futuring process, a group of 5 to 10 people produce an imaginative list of future possibilities. At this stage it is the quantity of possibilities listed that matters, not the quality. The futuring team then eliminates those possibilities that are highly unlikely to occur or are too similar to the present. Next, the team identifies those possibilities that are to be developed in detail. One

method for doing this is to use a Delphi survey (see the previous section on Delphi forecasting) to determine the likelihood of occurrence and the degree of impact for the possibilities selected. The consequences of the future possibilities determined to be likely and important by the Delphi panel of experts are explored by using a futures wheel.

To construct a futures wheel, select one likely and important trend, for example, "serial careers become the norm." The group must agree unanimously on three to six consequences of this central trend in order to construct the first-level consequences of the wheel. The group completes the second level of the wheel by agreeing on several consequences for each of the first-level consequences. If desired, a third and fourth level of the wheel may be completed in the same manner.

After constructing the futures wheel, the group determines possible interactions among the consequences on the wheel by using a cross-impact matrix. The results of the cross-impact matrix are summarized by assigning to the consequences one of three values: "most likely," "less likely," and "least likely." Using these three groups of consequences as a guide, the group writes three separate scenarios, each of which describes a possible future in which the central trend is operative.

Advantages. The futuring process reflects the advantages and limitations of its component forecasting techniques. However, there are additional advantages for the process as a whole. For example, the futuring process is flexible and can be used for any content area. In addition, the process can be used to generate many alternatives, explore their consequences, and determine the nature and degree of interaction among them. Many participants are involved in each step of the process, thereby giving an opportunity for a wide range of inputs. Furthermore, the futuring process relies on complementary forecasting techniques and can lead to understanding the present as well as the future.

Limitations. In addition to the disadvantages inherent in each component of the futuring process, the process as a whole is time-consuming and highly subjective.

For Additional Information

Wagschal, P.H. "Futuring: A Process for Exploring Detailed Alternatives." *World Future Society Bulletin* (September/October, 1981): 25-30.

Resources

The resources selected for this handbook can be of value to teachers, administrators, school board members, and others interested in gaining expertise in long-range forecasting and planning processes and futures-oriented, K-12 curriculum development.

The resources included here are multipliers, that is, each will lead to additional resources. All resources have been contacted and each has provided the information listed. Neither Phi Delta Kappa nor the Future Studies Program at the University of Massachusetts serves as an agent for these consultants. Persons wishing to contact these resources must do so directly.

In the Alphabetical Listing, each resource is listed in alphabetical order by the last name of the contact person. Under each resource name, you will find a description of the resource and services offered, with comments on special features of the resource. In a few instances, a resource offers several services or programs. To distinguish these, a letter is included after the resource name. For example, Doe, J. (a), and Doe, J. (b) indicate two separate resource listings under the same name.

The Resource Categories section is a topical listing. If you seek someone with experience in forecasting, simply look under the heading "Forecasting." The people listed there can be contacted by looking up their addresses under the Alphabetical Listing.

The Readings section lists those printed resources that provide a conceptual background for futures studies in education. The field is broad, so it is impossible to list all published resources. Those publications selected for inclusion in this section should lead you to additional materials.

Alphabetical Listing

Association for Supervision and Curriculum Development (ASCD)
225 N. Washington St.
Alexandria, VA 22314
(703) 549-9110

Consultants, training, planning, and publications.

ASCD offers information, training, and program planning and implementation through conferences, institutes, publications, audiovisuals, and a Resource Information Service. ASCD seeks to improve educational programs. Current projects include working with school districts on long-range planning for staff development and redefinition of curricula. Institutes on a broad range of topics are offered at various locations.

Battung, Diane
968 Tularosa Dr., #1
Los Angeles, CA 90026
(213) 663-1057

Consultant to educators, administrators, and school boards.

Battung conducts an annual Brain/Mind Institute with Galyean (see listing under Galyean, Beverly-Colleene [a]). She also conducts workshops on "Body Intelligence: The Intimate Knower" and teaches a course in future studies at International College of Los Angeles.

Beck, Susan
Assistant Principal
Vermont Elementary School
3695 Vermont St.
San Bernardino, CA 92410
(714) 887-2555

Total Futures Program, grades K-6.

Beck developed the total school futures-oriented program now in place at Riley Elementary School in San Bernardino, California. For a complete description, see the listing under Sherba, Cora.

Bisignano, Sr. Judith
Kino Learning Center
6625 North First Ave.
Tucson, AZ 85718
(602) 297-7278

Preparing Kids for the Year 2000, ages 4-18.

Kino Learning Center stresses individual discovery, first-hand experience, and creative work. Students choose from sequences of activities that meet their needs and expanding interests. Problem-solving and critical-thinking skills are integrated within each sequence. Students, faculty, and parents cooperatively designed and created their learning spaces. In high school, each student builds his/her own curriculum in conjunction with school and community resources, including Pima Community College and Barry University in Miami, Florida. School hours are flexible, from 8 a.m. to 8 p.m.

Kino curricula and publications are available by writing or calling the Center. Sr. Judith believes that teachers must be willing to take risks; it takes a special kind of educator and special skills to work in their program.

Carswell, Evelyn
Department of Elementary Education
University of Arizona
Tucson, AZ 85721
(602) 621-2211

Consultant, Graduate-level Future Studies Program.

Carswell has worked with Kino Learning Center for the past 10 years in planning and implementing its programs (see listing under Bisignano, Sr. Judith). Her students participate in the program at Kino Learning Center. Carswell is particularly interested in creative approaches to "Schooling for the 21st Century."

Daggett, Willard R.
Division of Occupational Education Instruction
New York State Department of Education
99 Washington Avenue
Albany, NY 12234
(518) 474-2451

Consultant, K-14 Total Futures Program.

Daggett conceived, planned, and implemented New York State's Futuring Project, which totally revamped the state's industrial arts, home economics, business, agriculture, health, trade, and technical programs in which one million students are involved annually. The project, which involved 300 participants, created a new delivery system and curriculum for these programs. The new program is based on foundations skills in technological literacy, problem solving, decision making, and communication skills.

Daggett has considerable experience in working with local boards of education and state boards to identify needed changes and, most importantly, gaining the support of interest groups for bringing about change.

Damlo, Penny
Anticipatory Sciences
123 E. Grant St.
Minneapolis, MN 55414
(612) 872-1841

Consultant, educator.

In 1973, Damlo wrote the program and developed the curriculum for a one-year course in future studies offered at Burnsville High School, Burnsville, Minnesota. That program, after modifications, is now offered in over 200 schools. She provides inservice training for educators and consults on the presentation, evaluation, and dissemination of new educational programs.

Dixon, Ted
Milford Junior & Senior High Schools
5733-35 Pleasant Hill Rd.
Milford, OH 45150
(513) 831-2990

Total Futures Program, grades 9-12.

The program now in place at Milford includes studies on futures perspectives, personal futures, and a mentorship program. Workshops for teachers in the methodology of developing and teaching futures courses are offered through Miami University. Dixon is currently developing a four-year curriculum for future studies.

Eggers, John
Coordinator
University of Northern Iowa
Educational Service Center
1001 College Drive
Mason City, IA 50401
(515) 424-2143

Consultant to teachers and principals.

Eggers specializes in the integration of the futuring process into established curricula. He teaches a course on "Futurizing the Classroom" and publishes the newsletter, *Educational Futures*. He has published a catalogue of human and nonhuman educational resources (with Glines, Don, listed below) and a variety of elementary classroom materials. Starting in 1984, he will be editing and writing a new newsletter, *Educators Forecast*, for Master Teacher (see listing under Master Teacher). Seminars on related topics are to be offered around the country under the sponsorship of Master Teacher.

Elarde, Jean
Maslow-Toffler School of the Future
South High Annex
Paradise Lane
Brentwood, NY 11717
(516) 435-2536

Total futures program, grade 12.

The Maslow-Toffler School of the Future is a program in which students are responsible for administration, curriculum design, and setting goals. It has broad community support in defining and implementing its programs. The school includes a mentorship program and offers some advanced placement college credit. Students and faculty advisors in the program have coped creatively with many problems inherent in developing a radically new program.

Feddema, Howard (a)
Township High School District 214
799 West Kensington Road
Mt. Prospect, IL 60056
(312) 259-5300

Futures courses, grades 11 and 12.

More than 900 students from the four high schools in this district participate in some type of futures-oriented coursework. Topics explored are determined by the students. Methods of exploration incorporate a variety of forecasting and futures problem-solving techniques. Currently the district is trying to incorporate these same techniques in the traditional curricula.

Feddema, Howard (b)
(See address above)

NEC Summer Institute for Gifted Students, grades 7-12.

The institute focuses on the development of critical thinking and decision-making skills, improvement of interpersonal skills, ethics, and the application of futures methodology in problem solving. Staff participating in the institute receive inservice training in futures studies, the use of futures methodology, and the use of critical thinking skills to analyze global issues.

Feddema, Howard (c)
(See address above)

Comprehensive Planning System, Township High School, District 214.

In 1980, the district instituted a system to integrate planning throughout all schools. There are six components to the planning process: normative planning, futures research, strategic planning, operational planning, implementation, and review/evaluation and control. After 2 ½ years of operation, the plan was assessed. Changes to eliminate known weaknesses are now being implemented. Copies of the plan are available.

Galyean, Beverly-Colleene (a)
Director
Center for Integrative Learning
767 Gladys Avenue
Long Beach, CA 90804
(213) 433-2038

Consultant.

Galyean specializes in the implementation of integrative learning models and techniques in schools. Guided imagery is used as one means of enhancing student learning potentials. Brain/Mind Institutes and workshops for educators and others interested in integrative learning are held periodically during the year at various locations. (See also listing under Battung, Diane).

Galyean, Beverly-Colleene (b)
Director
M.A. and Ph.D. Programs in Integrative Education
International College of Los Angeles
1019 Gayley Avenue
Los Angeles, CA 90024-3469
(213) 208-6761

Graduate training in integrative education.

This program explores the human-potential sciences as they are related to intelligence, learning, and education. The tutorial program allows considerable self-directed learning.

Glines, Don (a)
Administrative Section
Division of Instructional Support
State Department of Education
721 Capitol Mall
Sacramento, CA 95814
(916) 445-7459

Oversees futures programs in public schools in California.

The Administrative Section of the Division of Instructional Support maintains a computerized bibliography of materials relating to societal futures, educational futures, and educational alternatives and change and assists in all phases of developing future-oriented education in California.

Glines, Don (b)
(See address above)

Consultant.

Glines is a consultant for school district personnel who are interested in future-oriented education. He is the author of numerous publications on educational futures and on the processes involved. Glines is an important source of information on national trends.

Hartley, Carolyn
East Windsor Public Schools
East Windsor, NJ 08561
(609) 448-4897

Total Futures Program, grades K-12.

Hartley is a member of the East Windsor Public Schools committee that is developing a futures program to tie the study of global issues into the present humanities program. Parts of the experimental program are now being tested in the classroom, and the full program is expected to be implemented in the fall of 1984.

Hoffman, Robert
Jericho High School
Cedar Swamp Road
Jericho, NY 11753
(516) 681-4100

Futures Studies, grades 10-12.

The first high school futures course in the Northeast, the program at Jericho High School has served as a prototype for many others. The course is enthusiastically supported by the administration, school board, and community. Classes participated with Disney's EPCOT in designing futuristic programs for visiting schools. Jericho was the first school selected to participate in EPCOT's academic program; 44 students went to EPCOT for one week, while those remaining at home participated in concurrent EPCOT research projects.

There is some integration of the futures course with other academic subjects. The curriculum is currently being redesigned and will be ready for dissemination by fall 1984.

Holt, John
Director
Growing Without Schools
729 Boyleston Street
Boston, MA 02116
(617) 437-1550

Schooling at home, birth to ?

Growing Without Schools is the center of a network spanning North America that supports parents who educate their children at home. Information on state and local laws pertaining to home schools, the experiences of parents involved in home schooling, learning techniques, and resources is available.

Resources include certified educators willing to assist home schoolers, a book list, news magazine, and names and addresses of local organizations that support home schooling.

Le Mayhew, Bethene
Futures Curriculum Materials for Classroom & Magnet Concept
Montclair Public Schools
22 Valley Road
Montclair, NJ 07042
(201) 783-4000

Total School Magnet Concept.

All children have talents and gifts; it is up to the school to determine where these lie and how to maximize their potential. Montclair's program starts at the age of 4 with half the school time organized around "basics" and the rest open for exploration according to student interests. When students indicate readiness, they are given increasing responsibility for developing their own learning model. Fifty percent of Montclair public school students are in this program. The goal is to have all children involved in it. Curricula have been developed for this program and for the recently closed futures school.

Madden, Lowell
Indiana University-Purdue University at Fort Wayne
2101 E. Colosseum Blvd.
Fort Wayne, IN 46805
(219) 482-5865

Total Community Futures Program.

Several years ago, Fort Wayne's economic base became unstable, and its citizens realized that they were unprepared for the challenges of transition. A consortium, "Fort Wayne Futures," started looking at alternative solutions to solve their problems. One result was the formation of a consortium, sponsored by the Fort Wayne Chapter of Phi Delta Kappa, of five school districts that are now working to infuse future studies into the K-12 curriculum. Twenty teachers began the process in the fall of 1983. In addition to using a basic curriculum, the selected faculty will add ideas developed in the classroom, with the objective of having a working program by fall 1984.

Marien, Michael
Director
Information for Policy Design
Lafayette, NY 13084
(315) 677-9278

Consultant, futures information and resources.

Information for Policy Design provides information and referrals for futurists in all disciplines. Marien is also editor of "Future Survey," an annotated bibliography of current materials and publications that are of concern to futurists in all fields and disciplines. The "Future Survey" arose out of his book *Societal Directions and Alternatives*, an annotated bibliography of resources for futurists. To subscribe to "Future Survey," contact:

World Future Society
P. O. Box 30369
Bethesda, MD 20814

Master Teacher
Leadership Lane
Manhattan, KS 66502
(913) 539-0555

Publishers of information on educational futures; seminars.

Master Teacher publishes "Educators Forecast," a how-to publication on futurizing the classroom, and also publishes other educational materials. The company offers presentations on this and related topics across the country. (See listing under Eggers, John, for additional information.)

Morse, James E.
West Bloomfield Schools
Administrative Service Center
3250 Commerce Road
West Bloomfield, MI 48033
(313) 682-3555

Total futures program, grades 6 through high school.

The West Bloomfield Schools developed a curriculum to integrate global issues, humanities, problem solving, and decision-making skills into a total school program. Parts of the curriculum are now being offered as optional classes. The complete curriculum is an excellent resource for the development of total school programs and for information on the problems inherent in changing the thrust of education. It is available from James Doyle, Assistant Superintendent for Instruction (send $10.00).

Pino, Ed (a)
Director
International Graduate School of Education (IGSE)
Parker, CO 80134
(303) 841-0220

Professional training, graduate level.

IGSE offers courses on program planning, forecasting skills, program development and implementation, evaluation studies, and resource development. Eggers' catalogue of human and nonhuman educational resources (see listing under Eggers, John) was developed using the resources of IGSE.

Pino, Ed (b)
(See address above)

Consultant.

Pino consults with school districts interested in redesigning curricula and programs. He also runs a computer matchmaker service for those desiring a particular set of talents with consultants having the required expertise.

Primavera, Robert
Maslow-Toffler School of the Future
South High Annex
Paradise Lane
Brentwood, NY 11717
(516) 435-2536

See information under Elarde, Jean.

Schiller, Sherry
Director
Law-Related Education Project
Close-up Foundation
1235 Jefferson Davis Hwy.
Arlington, VA 22203
(703) 892-5400

Consultant; workshops on futures planning and forecasting techniques.

Schiller has taught an eighth-grade futures program within the traditional school program. She is experienced in alternative education and basic skills development. Currently, she is working on a program to develop the future citizenship skills of children involved in the juvenile justice system.

Sharick, Helen
Principal
Brook Knoll Elementary School
150 Tree Top Dr.
Scott's Valley, CA 95060
(408) 427-1050

Futures program, grades K-6.

This is a new program developed by the school with community involvement. Children are trained in math and science on the computer, then progress to humanistic skills. Simulations about tomorrow's world and its implications are used extensively. Teachers have now been trained in computer use. The school has also done extensive inservice training in future issues and futures methodology with the staff and with community members involved in program development. Inservice training in the humanities with an orientation toward global issues is being planned.

Sherba, Cora
Riley Elementary School
1266 N "G" St.
San Bernardino, CA 92410
(714) 884-8791

Total Futures Program, grades K-6.

Riley Elementary has a program for total school involvement in a thematic, future-oriented approach to global issues with emphasis on developing critical thinking skills. All courses are interdependent; hands-on experience is offered where possible. Bloom's Taxonomy has been used in curriculum development. Before the total futures program was developed and implemented, Riley Elementary with an 80% minority population had a poor achievement record. Within a few years of program implementation, Riley Elementary's reputation for achievement won it a place among the most desirable schools in San Bernardino. The school is now racially balanced. The curricula that are used have been written into School Improvement Plans. Teacher training in Bloom's Taxonomy is offered. Community involvement in the program is significant. Themes change monthly. A library of curricula is available.

Smith, Sr. Maura
Principal
Mercyhurst Preparatory School
538 East Grandview Blvd.
Erie, PA 16504
(814) 825-0210

Global education, grades 9-12.

Mercyhurst addresses specific present and future issues through the use of frequently occuring "Forum Days." Community resources from business, industry, and science are used to enhance the exploration of important issues. Curricula are currently undergoing revision. "Challenge," a program of career exploration tailored to fit within the academic schedule, is also offered. Mercyhurst is actively planning for future change.

Snyder, Carole (a)
Assistant Director of Curriculum and Instruction
St. Paul Public Schools
360 Colburne St.
St. Paul, MN 55102
(612) 293-7793

Futures-oriented standard curricula, grades 7-12.

Futures-oriented units are incorporated into the standard curricula in English, humanities, and social studies programs. Literacy and the preparation of the students for living in a global society are of primary concern.

The St. Paul school system may soon be developing creative techniques for teaching critical thinking and writing skills to urban disadvantaged students. This will require learning how to develop the needed tools. There is strong support from the business community for this potential project.

Snyder, Carole (b)
(See address above)

Talented and gifted program, elementary grades.

The program features the use of microcomputers for the development of forecasting and other futuring skills. Students investigate the future through the study of global issues.

Snyder, Carole (c)
(See address above)

Kennedy School Collaborative, elementary grades.

The Collaborative, made up of public schools, foundations, businesses, and universities, focuses on math, computer science, and the use of computers as learning tools in other disciplines.

Taylor, Paula
4835 Penn Ave. S.
Minneapolis, MN 55409

Futurist author.

Taylor's publications, including *The Kids' Whole Future Catalog* and the *Creating Futures* activity cards, are wonderful classroom resources. The latter, co-authored with Elizabeth Klenzman, was developed with funds provided by the Minnesota Council on Quality Education and is available from the Minneapolis Public Schools (see Klenzman in the Readings section).

Theobald, Robert
Box 2240
Wickenburg, AZ 85358
(602) 684-7861

Consultant.

Theobald is currently developing "Action Linkage," a network of people working for social change and on the impacts that foreseen changes may make on education. He consults on curriculum design and prepares materials designed to elicit discussion about social change and educational directions for those interested in planning for the future.

Wagschal, Peter (a)
Director
Future Studies Program
School of Education
University of Massachusetts
Amherst, MA 01003
(413) 545-0981

Futures program, graduate level.

The Future Studies Program is oriented toward the study of alternative sociopolitical futures. Students design their own programs with assistance from program advisors. The Future Studies Program draws on the resources of all programs at the University of Massachusetts.

Wagschal, Peter (b)
(See address above)

Outreach program; consulting.

Under a grant from Phi Delta Kappa, the Future Studies Program has completed work on the project, "Schooling for the 21st Century." This handbook is one of the results of that project. The program also provides consulting services and workshops to schools, school systems, businesses, and other institutions regarding forecasting methodologies, alternative futures, curriculum development in future studies, and the use of education technologies.

Watson, Peggie
Killeen High School
500 N. 38th St.
Killeen, TX 76541
(817) 699-0392

Two-year program for talented and gifted students, grades 11-12.

Students are heavily involved in designing and teaching courses in the program. Self-designed independent study is stressed. Seniors participate in a mentorship program: each student is assigned to a member of the professional or business community for four hours each day. The Talented and Gifted Program seeks to develop problem solving and critical thinking skills through the study of global issues. Students annually participate in the Texas Future Problem Solving Bowl in which the students in the program took second place in 1983.

Weaver, Ray
Ball State University
Center for Lifelong Learning
Muncie, IN 47306
(317) 285-8209

Consultant.

Weaver specializes in long-range planning for public schools, colleges, and universities. He offers seminars in forecasting for government officials, public school administrators, and planners. Inservice workshops are available for educators.

Wilson, Morris D.
Des Moines Independent Community School District
1800 Grand Avenue
Des Moines, IA 50307
(515) 284-7839

"Oracle," a planning tool.

"Oracle" was developed in 1982 as a tool for exploring the future and what it may hold for a school district. It includes three scenarios based on three sets of circumstances — optimistic, pessimistic, or static orientation — which reflect societal conditions that have an impact on education. "Oracle," with the accompanying working paper, is used to elicit responses from workshop participants about the future of education in the areas of administration, curriculum design, and education theory. "Oracle" is a useful concept for approaching long-range planning when broad input is desired.

World Future Society
P. O. Box 30369
Bethesda, MD 20814

Information, publications, conferences.

Publications include *The Futurist*, a bi-monthly publication of timely articles on the future, and *Future Survey*, a monthly digest of books, articles, and reports concerning trends, forecasts, and policies for the future. The Society acts as a clearinghouse for information on the future. As part of this, it sponsors an annual convention that features a particular topic of interest to futurists. The Educational Division of the World Future Society also sponsors conferences of special interest to educators.

Resource Categories

Consulting

Association for Supervision and Curriculum Development
Battung, Diane
Bisignano, Sr. Judith
Carswell, Evelyn
Daggett, Willard
Damlo, Penny
Dixon, Ted

Eggers, John
Feddema, Howard (a, b, c)
Galyean, Beverly-Colleene (a, b)
Glines, Don (b)
Hartley, Carolyn
Hoffman, Robert
Holt, John

Le Mayhew, Bethene
Madden, Lowell
Marien, Michael
Morse, James E.
Pino, Ed

Schiller, Sherry
Sharick, Helen
Smith, Sr. Maura
Snyder, Carole (a, b, c)

Theobald, Robert
Wagschal, Peter (b)
Watson, Peggie
Weaver, Roy
Wilson, Morris

Curriculum

Beck, Susan
Bisignano, Sr. Judith
Damlo, Penny
Eggers, John
Elarde, Jean
Feddema, Howard (a, b, c)
Hartley, Carolyn
Hoffman, Robert
Holt, John
Le Mayhew, Bethene
Madden, Lowell
Morse, James E.
Primavera, Robert
Sharick, Helen
Sherba, Cora
Snyder, Carole (a, b, c)
Taylor, Paula
Wagschal, Peter (a)
Watson, Peggie

Forecasting

Bisignano, Sr. Judith
Daggett, Willard
Feddema, Howard (c)
Glines, Don (b)
Marien, Michael
Schiller, Sherry
Wagschal, Peter (a, b)
Weaver, Roy
Wilson, Morris

Information

Association for Supervision and Curriculum Development
Eggers, John
Glines, Don (a)
Holt, John
Marien, Michael
Master Teacher
Pino, Ed
Theobald, Robert
World Future Society (also see Marien, Michael)

Planning

Association for Supervision and Curriculum Development
Battung, Diane
Beck, Susan
Bisignano, Sr. Judith
Carswell, Evelyn
Daggett, Willard
Damlo, Penny
Dixon, Ted

Eggers, John
Feddema, Howard (c)
Galyean, Beverly-Colleene (b)
Glines, Don (a, b)
Hartley, Carolyn
Hoffman, Robert
Holt, John

Le Mayhew, Bethene
Madden, Lowell
Marien, Michael
Master Teacher
Morse, James E.
Pino, Ed

Schiller, Sherry
Sharick, Helen
Smith, Sr. Maura
Snyder, Carole (a, b, c)
Theobald, Robert
Wagschal, Peter (b)
Watson, Peggie
Weaver, Roy
Wilson, Morris

Programs: Elementary School

Beck, Susan
Bisignano, Sr. Judith
Daggett, Willard
Eggers, John
Hartley, Carolyn
Holt, John
Le Mayhew, Bethene
Madden, Lowell
Sharick, Helen
Sherba, Cora
Snyder, Carole (b, c)

Programs: Middle School

Bisignano, Sr. Judith
Daggett, Willard
Eggers, John
Hartley, Carolyn
Holt, John
Le Mayhew, Bethene
Madden, Lowell
Morse, James E.

Programs: Junior High School

Bisignano, Sr. Judith
Daggett, Willard
Dixon, Ted
Eggers, John
Feddema, Howard (a)
Hartley, Carolyn
Holt, John
Le Mayhew, Bethene
Madden, Lowell
Morse, James E.
Snyder, Carole (a)

Programs: Senior High School

Bisignano, Sr. Judith
Daggett, Willard
Damlo, Penny
Dixon, Ted
Eggers, John
Elarde, Jean

Feddema, Howard (a)
Hartley, Carolyn
Hoffman, Robert
Holt, John
Le Mayhew, Bethene
Madden, Lowell
Morse, James E.
Primavera, Robert
Smith, Sr. Maura
Snyder, Carole (a)
Watson, Peggie

Professional Training

Association for Supervision and Curriculum Development
Battung, Diane
Bisignano, Sr. Judith
Carswell, Evelyn
Daggett, Willard
Damlo, Penny
Dixon, Ted
Eggers, John
Feddema, Howard (b)
Galyean, Beverly-Colleene (a, b)
Glines, Don (a, b)
Madden, Lowell
Pino, Ed (a)
Schiller, Sherry
Sharick, Helen
Sherba, Cora
Wagschal, Peter (a, b)
Weaver, Roy

Readings

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McHale, M. *Ominous Trends and Valid Hopes: A Comparison of Five World Reports.* Minneapolis: Humphrey Institute of Public Affairs, University of Minnesota, 1981.

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Shane, Harold G. *The Educational Significance of the Future.* Bloomington, Ind.: Phi Delta Kappa Educational Foundation, 1973.

Taylor, Paula. *The Kids' Whole Future Catalog.* New York: Random House, 1982.

Toffler, Alvin. *The Third Wave.* New York: William Morrow, 1980.

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